

CLAIMS

1. A furnace for cracking hydrocarbon feed to produce olefins, said furnace comprising:

(a) at least one fired radiant chamber, wherein said radiant chamber is divided into at least two separate independent radiant zones by a fired radiant chamber dividing means;

(b) at least one radiant burner in each said zone of said fired radiant chamber;

(c) a convection chamber in direct communication with said fired radiant chamber;

(d) at least one process coil for each said separate independent radiant zone, wherein each said process coil extends through at least a portion of said convection chamber and extends into one of said separate independent radiant zones before exiting said furnace;

(e) a flue for discharging flue gas located at the top of said convection chamber of said furnace;

(f) a means for independently controlling the radiant burners in each said separate independent radiant zone.

2. A furnace as defined in Claim 1 comprising two fired radiant chambers, and wherein each said fired radiant chambers comprises two separate independent radiant zones.

3. A furnace as defined in Claim 1 wherein said fired radiant chamber is divided into two separate independent radiant zones having substantially the same area.

4. A furnace as defined in Claim 1 wherein said fired radiant chamber is divided into two separate independent radiant zones which have substantially different area.

5. A furnace as defined in Claim 1 wherein said fired radiant chamber dividing means is a brick wall.

6. A furnace as defined in Claim 1 wherein said fired radiant chamber dividing means is a curtain of Nextel material.

radiant chamber dividing means is a combination of a curtain of Nextel material and ceramic fiber wall.

8. A furnace as defined in Claim 1 wherein the temperature of each said separate independent radiant zone is controlled independently.

9. An improved pyrolysis cracking furnace having a radiant cracking chamber wherein said improvement comprises dividing said radiant cracking chamber into at least two separate and independent radiant cracking zones by providing a dividing wall in said radiant cracking chamber and separately and independently controlling the temperature in each of said separate and independent radiant cracking zones.

10. An improved furnace as defined in Claim 9 wherein said fired radiant chamber dividing means is a brick wall.

11. A furnace as defined in Claim 9 wherein said fired radiant chamber dividing means is a curtain of Nextel material.

12. A furnace as defined in Claim 9 wherein said fired radiant chamber dividing means is a combination of a curtain of Nextel material and ceramic fiber wall.